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Marked Up CopyIn the Claims:

Please amend claim 1 by substitution as follows:

1. (Twice amended) An $m \times n$ sensor array, comprising:

m distribution fiber lines;

n return fiber lines; and

z sensor groups, each of said z sensor groups comprising:

y sensors; and

input couplers and output couplers, said input couplers and said output couplers

being connected to respective ones of said sensors, ~~each of said input couplers within any one of said z sensor groups being connected to a different one of said m distribution fiber lines;~~

~~wherein each of said return fiber lines is connected to all output couplers within a respective one of said z sensor groups;~~

wherein coupling ratios of said input couplers in said z sensor groups and coupling ratios of said output couplers in said z sensor groups in said sensor array are chosen to reduce differences in the returned optical signal power levels, ~~wherein the coupling ratios of said output couplers connected to a respective return fiber line are different from each other; and~~

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wherein said output couplers comprise a first output coupler and a second output coupler, wherein a first number of said output couplers are located between said first output coupler and a signal destination on one of said n return fiber lines, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first output coupler is based on the first number, wherein a second number of said output couplers are located between said second output coupler and the signal destination on the one of said n return fiber lines, wherein the coupling ratio of said second output coupler is based on the second number, wherein the second number is greater than the first number, wherein the coupling ratio of said second output coupler is larger than the coupling ratio of said first output coupler;

wherein m is 6 and n is 16.

Please delete claim 2.

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Please amend claims 4, 13, 17-18, and 21-23 by substitution as follows:

4. (Thrice amended) A sensor array, comprising:

distribution fiber lines;

return fiber lines; and

sensor groups, each of said sensor groups comprising:

sensors; and

input couplers and output couplers, said input couplers and said output couplers

being connected to respective ones of said sensors, ~~each of said input couplers within any~~

~~one of said sensor groups being connected to a different one of said distribution fiber~~

lines;

~~wherein each of said return fiber lines is connected to all output couplers within~~

~~respective ones of said sensor groups; and~~

wherein coupling ratios of said input couplers and said output couplers are chosen to reduce differences in the returned optical signal power levels, said input couplers in a first sensor group having a first input coupling ratio and said input couplers in a second sensor group having a second input coupling ratio different from said first input coupling ratio;

wherein one or more signal sources, that comprise a first signal source, are coupled with respective ones of said ~~m~~-distribution fiber lines, that comprise a first distribution fiber line;

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wherein said input couplers comprise a first input coupler and a second input coupler, wherein a first number of said input couplers are located on the first distribution fiber line between the first signal source and said first input coupler, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first input coupler is based on the first number, wherein a second number of said input couplers are located between the first signal source and said second input coupler, wherein the coupling ratio of said second input coupler is based on the second number, wherein the second number is greater than the first number, wherein the coupling ratio of said second input coupler is larger than the coupling ratio of said first input coupler;

wherein each output coupler is connected to a respective return fiber line from a sensor group having a coupling ratio that differs from the coupling ratio of the other output couplers connected to the respective return fiber line, wherein said output couplers comprise a first output coupler and a second output coupler, wherein a first number of said output couplers are located between said first output coupler and a signal destination on one of said return fiber lines, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first output coupler is based on the first number, wherein a second number of said output couplers are located between said second output coupler and the signal destination on the one of said return fiber lines, wherein the coupling ratio of said second output coupler is based on the second number, wherein the second number is greater than the first number, wherein the coupling ratio of said second output coupler is larger than the coupling ratio of said first output coupler, said input coupling ratios and said output coupling ratios selected in accordance with respective locations of said input couplers on said distribution fiber lines and respective locations of said output couplers on said return fiber lines.

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13. (Once amended) The array of claim 1, wherein the coupling ratios of said input couplers ~~in said z sensor groups and the coupling ratios of said output couplers in said z sensor groups in said sensor array~~ serve to cause all the returned optical signal power levels to be within a preselected variance range.

17. (Once amended) The array of claim 12, wherein z is 16 and y is 6.

18. (Once amended) The array of claim 12, wherein z is 8 and y is 12.

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21. (Once amended) An $m \times n$ sensor array, comprising:

m distribution fiber lines;

n return fiber lines; and

z sensor groups, each of said z sensor groups comprising:

y sensors; and

input couplers and output couplers, said input couplers and said output couplers

being connected to respective ones of said sensors, ~~each of said input couplers within any one of said z sensor groups being connected to a different one of said m distribution fiber lines;~~

~~wherein each of said return fiber lines is connected to all output couplers within a respective one of said z sensor groups; and~~

wherein coupling ratios of said input couplers in said z sensor groups and coupling ratios of said output couplers in said z sensor groups in said sensor array are chosen to reduce differences in the returned optical signal power levels, wherein said input couplers comprise a first input coupler and a second input coupler, wherein a first number of said input couplers are located between a signal source and said first input coupler on one of said m distribution lines, wherein the first number is greater than or equal to zero, wherein a second number of said input couplers are located between the signal source and said second input coupler on the distribution line, wherein the second number is greater than the first number, wherein the input coupling ratio of said second input coupler is higher than the input coupling ratio of said first input coupler;

wherein m is 6 and n is 16.

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22. (Once amended) An $m \times n$ sensor array, comprising:

m distribution fiber lines;

n return fiber lines; and

z sensor groups, each of said z sensor groups comprising:

y sensors; and

input couplers and output couplers, said input couplers and said output couplers being connected to respective ones of said sensors, each of said input couplers within any one of said z sensor groups being connected to a different one of said m distribution fiber lines;

wherein the n return fiber lines comprise one or more sets of ~~said n~~-return fiber lines, wherein a first one of each of the one or more sets of ~~said n~~-return fiber lines is connected to a first subset of said output couplers within a respective one of said z sensor groups, wherein a second one of each of the one or more sets of ~~said n~~-return fiber lines is connected to a second subset of said output couplers within the respective one of said z sensor groups;

wherein coupling ratios of said input couplers ~~in said z sensor groups~~ and coupling ratios of said output couplers in said z sensor groups ~~in said sensor array~~ are chosen to reduce differences in the returned optical signal power levels, ~~wherein the coupling ratios of said output couplers connected to a respective return fiber line are different from each other~~; and

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wherein said output couplers comprise a first output coupler and a second output coupler, wherein a first number of said output couplers are located between said first output coupler and a signal destination on one of said n return fiber lines, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first output coupler is based on the first number, wherein a second number of said output couplers are located between said second output coupler and the signal destination on the one of said n return fiber lines, wherein the coupling ratio of said second output coupler is based on the second number, wherein the second number is greater than the first number, wherein the coupling ratio of said second output coupler is larger than the coupling ratio of said first output coupler;

wherein m is 6 and n is 16.

23. (Once amended) The array of claim 22, wherein the one or more sets of ~~said n~~ return fiber lines comprise one or more pairs of ~~said n~~ -return fiber lines, wherein a first return fiber line ~~one of each of the one or more pairs~~ of ~~said n~~ -return fiber lines is connected to the first subset of said output couplers within the respective one of said z sensor groups, wherein a second return fiber line ~~one of each of the one or more pairs~~ of ~~said n~~ -return fiber lines is connected to the second subset of said output couplers within the respective one of said z sensor groups.

Please add claims 25-30 as follows:

25. (New) The array of claim 1, wherein each of said input couplers within any one of said z sensor groups is connected to a respective one of said m distribution fiber lines.

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26. (New) The array of claim 1, wherein each of said return fiber lines is connected to all output couplers within a respective one of said z sensor groups.

27. (New) The array of claim 21, wherein z is 16 and y is 6.

28. (New) The array of claim 21, wherein z is 8 and y is 12.

29. (New) The array of claim 22, wherein z is 16 and y is 6.

30. (New) The array of claim 22, wherein z is 8 and y is 12.

Remarks

Entry of the above-noted amendments, reconsideration of the application, and allowance of all claims pending are respectfully requested. By this amendment, claims 1, 4, 13, 17-18, and 21-23 are amended, and claims 25-30 are added, to more particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claim 2 is deleted. These amendments to the claims constitute a bona fide attempt by applicants to advance prosecution of the application and obtain allowance of certain claims, and are in no way meant to acquiesce in the substance of the rejections. Support for the amendments can be found throughout the specification (e.g., page 2, line 28, to page 3, line 2; page 3, lines 12-27; page 4, line 27, to page 5, line 10; page 5, lines 15-18; page 5, line 27, to page 6, line 15; page 6, lines 24-29; page 8, lines 3-11; and page 8, lines 20-21), drawings (e.g., FIGS. 1, 2A-2H, 3, 4A-4H, and 5), and claims and thus, no new matter has been added. Claims 1 and 3-30 are pending.

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Interview on October 8, 2002:

The amendments herein follow an Interview by telephone conference between the Examiner and applicants' attorney on October 8, 2002 in which features of the claims, specification, and drawings were discussed. During the telephone conference, positive discussion was had and some agreement was reached as to amendments to the claims that would advance prosecution of the subject application, as described herein. The time and courtesy afforded applicants' attorney as well as the positive discussion and agreement reached, are gratefully acknowledged by applicants.

Claims 1 and 18 Rejections - 35 U.S.C. §132:

Claims 1 and 18 are rejected under 35 U.S.C. §132 because they allegedly introduce new matter into the disclosure of the invention.

The examiner stated that the claim 1 language: "each of said input couplers within any one of said z sensor groups (wherein z being 8) being connected to a different one of said m distribution fiber lines" and "each of said return fiber lines is connected to all output couplers within a respective one of said z sensor groups (wherein z being 8)" in combination with claim 18 introduce new matter into the disclosure of the invention. The cited language has been deleted from independent claim 1.

Withdrawal of the §132 rejection of claims 1 and 18 is therefore respectfully requested.

In addition, new claim 25 dependent from claim 1 recites the limitation "each of said input couplers within any one of said z sensor groups is connected to a respective one of said m distribution fiber lines" previously claimed in claim 1. Claim 25 refers to one embodiment of the

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invention illustrated in FIGS. 2-2H, and supported in the specification (page 4, line 27, to page 5, line 3).

New claim 26 dependent from claim 1 recites the limitation "each of said return fiber lines is connected to all output couplers within a respective one of said z sensor groups" previously claimed in claim 1. Claim 26 refers to one embodiment of the invention illustrated in FIGS. 2-2H, and supported in the specification (page 6, lines 10-15).

Claims 22-24 Rejections - 35 U.S.C. §132:

Claims 22-24 are rejected under 35 U.S.C. §132 because they allegedly introduce new matter into the disclosure of the invention.

The examiner stated that the claim limitations: "the n return fiber lines comprise one or more sets of said n return fiber lines" (claim 22) and "the one or more sets of said n return fiber lines comprise one or more pairs of said n return fiber lines" (claim 23) are not supported by the specification. The examiner states: "The specification never discloses that the number of the return fiber lines is more than or less than 16. One or more sets of the n return fiber lines and the one or more pairs of n return fiber lines will make the number of fiber lines more than 16." Claims 22 and 23 have been amended to more particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claim 22 has been amended to recite "the n return fiber lines comprise one or more sets of return fiber lines." Exemplary support for this amendment to claim 22 appears in FIGS. 4-4H and the specification (page 8, lines 4-11; page 8, lines 20-21). Claim 23 has been amended to recite "the one or more sets of return fiber lines comprise one or more pairs of return fiber lines." Exemplary support for the claim 23 limitation appears in FIGS. 4-4H and the specification (page 8, lines 4-11; page 8, lines 20-21).

Withdrawal of the §132 rejection of claims 22-24 is therefore respectfully requested.

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Claims 1-3 and 9-19 Rejections - 35 U.S.C. §112:

Claims 1-3 and 9-19 are rejected under 35 U.S.C. §112, first paragraph, because the specification, while being enabling for a 6x16 sensory array, allegedly does not reasonably enable an mxn sensory array. This rejection is respectfully, but most strenuously, traversed.

The examiner stated "The specification teaches the sensor array has a 6x16 configuration... with specific coupling ratios... and does not teach explicitly that the (6x16) configuration may be generalized to an (m x n) configuration where m and n assume any values that are different from 6 and 16. In particular, the specification fails to teach the coupling ratios for these other configurations (m x n), which makes the other configurations inoperable."

Claims 1, 21, and 22 have been amended to recite "wherein m is 6 and n is 16." This amendment to claim 1 overcomes the §112 rejection of claim 1, as agreed during the Interview.

Withdrawal of the §112 rejection of claims 1-3 and 9-19 is therefore respectfully requested.

Claims 8 and 22-24 Rejections - 35 U.S.C. §112:

Claims 8 and 22-24 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification. This rejection is respectfully, but most strenuously, traversed.

Claim 8 has support in the specification, e.g., at page 5, lines 1-3, where the specification teaches the use of a 1 x 2 input coupler. Claim 8 has support in the specification, e.g., at page 5, lines 15-18, where the specification teaches the use of a 1x 2 output coupler.

Claims 22-24 have been amended as described above to overcome the 35 U.S.C. §132 rejection which places claims 22-24 in a condition for allowance.

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Withdrawal of the §112 rejection of claims 8 and 22-24 is therefore respectfully requested.

Claims 4-8, 13, and 20-21 Rejections - 35 U.S.C. §112:

Claims 4-8, 13, and 20-21 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which the applicant regards as the invention. This rejection is respectfully, but most strenuously, traversed.

The examiner stated "The phrase 'said m distribution lines' recited in claim 4 is indefinite since it lacks proper antecedent basis from an earlier part of the claim." Claim 4 has been amended to overcome the rejection. Claim 4 has been amended to recite "said distribution fiber lines" to refer to the proper antecedent.

The examiner stated "The phrase 'said output couplers in said sensor array' recited in claims 13 and 21 appears to be wrong and confusing." Claims 13 and 21 have been amended to overcome the rejection. "the coupling ratios of said input couplers in said z sensor groups and the coupling ratios of said output couplers in said sensor array" has been changed to "the coupling ratios of said input couplers and said output couplers in said z sensor groups" for clarification.

Withdrawal of the §112 rejection of claims 4-8, 13, and 20-21 is therefore respectfully requested.

The independent claims presented herewith serve to particularly point out and distinctly recite features of the patent application that are believed neither anticipated nor obvious over the art of the record. The dependent claims are believed allowable for the same reasons as the independent claims, as well as for their own additional characterizations.

Withdrawal of any and all remaining rejections is therefore respectfully requested.

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In view of the above amendments and remarks, allowance of all claims pending is respectfully requested. If an additional telephone conference would be of assistance in advancing the prosecution of this application, the Examiner is invited to call applicants' attorney.

Respectfully submitted,



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